



**ANALYSIS OF THE EPIDEMIOLOGICAL PROFILE OF
CONGENITAL HIP DEFORMITIES IN THE STATE OF BAHIA,
2011-2021**

Journal:	<i>Revista Paulista de Pediatria</i>
Manuscript ID	Draft
Manuscript Type:	Review
Keywords - Please find additional keywords from the following lists: http://decs.bvs.br/ and http://www.ncbi.nlm.nih.gov/mesh :	Quadril, Displasia Congênita de Quadril, Luxação Congênita de Quadril

SCHOLARONE™
Manuscripts



Critérios SciELO Brasil

Formulário sobre Conformidade com a Ciência

Aberta

versão 29 de junho de 2020

Por meio deste formulário os autores informam o periódico sobre a conformidade do manuscrito com as práticas de comunicação da Ciência Aberta. Os autores são solicitados a informar: (a) se o manuscrito é um preprint e, em caso positivo, sua localização; (b) se dados, códigos de programas e outros materiais subjacentes ao texto do manuscrito estão devidamente citados e referenciados; e, (c) se aceitam opções de abertura no processo de avaliação por pares.

Preprints

Depósito do manuscrito em um servidor de preprints reconhecido pelo periódico.

O manuscrito é um preprint?	
<input type="checkbox"/>	Sim - Nome do servidor de Preprints: DOI do Preprint:
<input checked="" type="checkbox"/>	Não

Disponibilidade de Dados de Pesquisa e outros Materiais

Autores são encorajados a disponibilizar todos os conteúdos (dados, códigos de programa e outros materiais) subjacentes ao texto do manuscrito anteriormente ou no momento da publicação. Exceções são permitidas em casos de questões legais e éticas. O objetivo é facilitar a avaliação do manuscrito e, se aprovado, contribuir para a preservação e reuso dos conteúdos e a reprodutibilidade das pesquisas.

Os conteúdos subjacentes ao texto do manuscrito já estão disponíveis em sua totalidade e sem restrições ou assim estarão no momento da publicação?	
<input checked="" type="checkbox"/>	Sim:
<input type="checkbox"/>	<input type="checkbox"/> os conteúdos subjacentes ao texto da pesquisa estão contidos no manuscrito
<input type="checkbox"/>	<input checked="" type="checkbox"/> os conteúdos já estão disponíveis
<input type="checkbox"/>	<input type="checkbox"/> os conteúdos estarão disponíveis no momento da publicação do artigo
	Segue títulos e respectivas URLs, números de acesso ou DOIs dos arquivos
	dos conteúdos subjacentes ao texto do artigo (use uma linha para

	cada dado):
()	Não: <input type="checkbox"/> dados estão disponíveis sob demanda dos pareceristas <input type="checkbox"/> após a publicação os dados estarão disponíveis sob demanda aos autores – condição justificada no manuscrito <input type="checkbox"/> os dados não podem ser disponibilizados publicamente. Justifique a seguir:

Aberturas na avaliação por pares

Os autores poderão optar por um ou mais meios de abertura do processo de *peer review* oferecidos pelo periódico.

Quando oferecida a opção, os autores concordam com a publicação dos pareceres da avaliação de aprovação do manuscrito?	
<input checked="" type="checkbox"/>	Sim
<input type="checkbox"/>	Não
Quando oferecida a opção, os autores concordam em interagir diretamente com pareceristas responsáveis pela avaliação do manuscrito?	
<input checked="" type="checkbox"/>	Sim
<input type="checkbox"/>	Não

1
2
3 **ANALYSIS OF THE EPIDEMIOLOGICAL PROFILE OF CONGENITAL HIP**
4
5 **DEFORMITIES IN THE STATE OF BAHIA, 2011-2021**
6
7
8

9 **Resumo**
10

11
12
13 **Objetivo:** Identificar a relevância das internações por deformidades congênitas do quadril na Bahia.
14

15 **Métodos:** Consiste em um estudo epidemiológico retrospectivo, em bases de dados públicas.
16

17 Descritores em ciências da saúde: “displasia congênita de quadril”, “Hip Dislocation Congenital” AND
18

19 “Luxação congênita de quadril”. Trata-se de uma pesquisa quali-quantitativa com a análise de dados
20

21 secundários e tipologia transversal nas bases de dados do Ministério da Saúde – Informações de Saúde
22

23 (TABNET), disponibilizados pelo Departamento de Informática do Sistema Único de Saúde
24

25 (DATASUS). **Resultados:** A Bahia foi o terceiro Estado com maior número de internamentos,
26

27 registrando 1.481 casos. Os municípios baianos com maiores prevalências foram Itanhém, Salvador e
28

29 Barreiras, com 912, 445 e 20 casos, respectivamente. **Conclusão:** O elevado número de deformidades
30

31 congênitas do quadril diagnosticadas tardiamente reflete um problema de saúde pública, necessitando
32

33 de investimentos em políticas públicas.
34
35
36
37
38

39 **Palavras-chave:** Quadril; Displasia Congênita de Quadril; Luxação Congênita de Quadril.
40
41
42

43 **ABSTRACT**
44
45
46

47 **Objective:** To identify the relevance of hospitalizations for congenital hip deformities in Bahia.
48

49 **Methods:** It consists of a retrospective epidemiological study, in public databases. Descriptors in health
50

51 sciences: “congenital hip dysplasia”, “Congenital Hip Dislocation” and “Congenital hip dislocation”.
52

53 This is qualitative-quantitative research with the analysis of secondary data and transversal typology in
54

55 the databases of the Ministry of Health – Health Information (TABNET), made available by the
56

57 Department of Informatics of the Unified Health System (DATASUS). **Results:** Bahia was the third
58

59 state with the highest number of hospitalizations, registering 1,481 cases. The municipalities in Bahia
60

with the highest prevalence were Itanhém, Salvador, and Barreiras, with 912, 445, and 20 cases, respectively. **Conclusion:** The high number of congenital hip deformities diagnosed late reflects a public health problem, requiring investments in public policies.

Keywords: Hip; Congenital Hip Dysplasia; Congenital Hip Dislocation.

INTRODUCTION

The concept of “congenital” is linked to everything inherent to birth. Congenital malformations are structural or functional anomalies, in which their etiological agent is a factor that originated before birth, whether genetic, environmental, or unknown.¹

The coxofemoral joint, called the hip, consists of 04 bones (ilium, ischium, pubis, and femur) of the spheroidal diarthrosis type. The femoral head projects directly into the acetabulum for the proper execution of joint movements, namely: flexion, extension, abduction, adduction, and internal and external rotation. Furthermore, to have physiological growth and development, an interdependent relationship between these structures is necessary, which are covered by hyaline cartilage that guarantees anatomic protection and adequate sliding.²

When this relationship is compromised, abnormal hip development occurs. A very limiting condition for the individual, since the main functions include support and support of body weight, in addition to transmitting the load from the skeleton to the lower limbs.²

Early diagnosis of these congenital lesions allows for a better prognosis. Immediate treatment reduces the impacts generated by the deformities, in addition to generating less pain. Children's hip pain is one of the searches for orthopedic consultation and the diagnosis is made through medical anamnesis, physical examination, and complementary exams. The treatment instituted can be drug, physical therapy and/or surgical, and even conservative treatment through orthosis.²

Among the congenital deformities of the hip, it is possible to measure the Developmental Dysplasia of the Hip (DDH), an anatomical abnormality with implications of deviation in normal development, during the embryonic, fetal, and child growth period, which may or may not last until

1
2
3 puberty. As a result, the interruption of the development of the acetabular cavity causes the non-integrity
4 of the concentric position of the femoral head, which generates a displacement that projects out of the
5 acetabulum, which may be fully displaced or subluxated.³
6
7

8
9 The clinic of congenital hip dysplasia has suggestive signs: asymmetry of the thigh folds and
10 popliteal folds, apparent shortening of the femur, asymmetry of the inguinal folds, and laxity of hip and
11 knee extension.³ The diagnosis is made in newborns and infants. through the Ortolani and Barlow
12 maneuver. If the physical examination is inconclusive, hip ultrasound can be used, which allows for
13 accurate visualization of the coxofemoral relationship.⁴
14
15

16
17 The clinic of congenital hip dysplasia has suggestive signs: asymmetry of the thigh folds and
18 popliteal folds, apparent shortening of the femur, asymmetry of the inguinal folds, and laxity of hip and
19 knee extension.³ The diagnosis is made in newborns and infants. through the Ortolani and Barlow
20 maneuver. If the physical examination is inconclusive, hip ultrasound can be used, which allows for
21 accurate visualization of the coxofemoral relationship.⁴
22
23

24
25 In this way, the epidemiological knowledge of congenital hip deformities in Bahia favors the
26 shift of public investments to services aimed at assisting this population, which generates actions for
27 early diagnosis and immediate initiation of adequate treatment, with reduction of sequelae and their
28 imposed limitations.
29
30

31 32 33 34 35 36 37 38 39 40 41 **MATERIALS AND METHODS** 42 43 44

45 The present scientific work is a retrospective, qualitative-quantitative epidemiological study,
46 whose data were obtained through consultations in the databases of the Ministry of Health - Health
47 Information (TABNET), made available by the Department of Informatics of the Unified Health
48 System. Saúde (DATASUS), accessed throughout the research period. As it is a public domain database,
49 it was not necessary to submit the project to the Research Ethics Committee.
50
51

52
53 The study population consists of patients hospitalized for congenital hip deformity, this
54 manifestation being evaluated in both sexes, of all ethnicities, and age groups, in public and private
55 services, from 2011 to 2021, in the state of Bahia. The years with the highest incidence of
56
57
58
59
60

hospitalizations for congenital hip deformities were measured, whose data were collected from the analysis of the category entitled ICD-10 morbidity list.

The research gathers health data and involves the category “epidemiology and morbidity”, being selected the group “Hospital Morbidity of the SUS (SIH/SUS)”, as well as the option “General, by place of hospitalization - from 2011”, specifying the State of Bahia and its Municipalities. In addition to the category “hospitalizations”, “value of hospital services”, “average hospitalization value”, “days of stay”, “deaths” and “age group” were selected.

The terms were derived from the Health Sciences Descriptors platform. The result includes articles in Portuguese and English. Documentary research was carried out with a literature review based on selected articles in the SciELO, PubMed, and LILACS databases published between 2000 and 2021, using the terms: "congenital hip dysplasia", "Congenital Hip Dislocation" and "Congenital Dislocation". hip”. The selection criteria for articles included those that address relevant aspects of congenital hip deformities and their epidemiological profile, as well as their definition, risk factors, etiology, symptomatology, pathophysiology, diagnosis, treatment, and complications.

RESULTS

Between the years 2011-2021, Bahia was the third state with the highest number of hospitalizations for congenital hip deformity, where 1,481 cases were recorded, which corresponds to 10.2% of notifications in Brazil during the period. The municipality of Itanhém had 61.5% (prevalence = 47.4 per thousand inhabitants) of cases registered in Bahia, followed by the city of Salvador with 30.0% (prevalence = 0.15 per thousand inhabitants) and Barreiras with 1.3 % (table 1).^{8,19}

Table 1. Estimated population, number and prevalence of cases of congenital hip deformities in Bahia during the years 2011-2021.^{8,19}

	ESTIMED POPULATION	NUMBER OF CASES	PREVALENCE
BAHIA	14.985.284	1.481	9.8 per 100 thousand inhab.
Itanhém	19.231	912	47.4 per thousand inhab.

Salvador	2.900.319	445	0.15 per thousand inhab.
Barreiras	158.432	20	0.12 per thousand inhab.
Ibiciuí	16.682	20	1.19 per thousand inhab.
Feira de Santana	624.104	18	0.028 per thousand inhab.
Vitória da Conquista	343.643	09	0.026 per thousand inhab.
Santo Antônio de Jesus	103.204	09	0.087 per thousand inhab.
Juazeiro	219.544	08	0.036 per thousand inhab.
Guanambi	85.353	07	0.082 per thousand inhab.
Teixeira de Freitas	164.290	06	0.036 per thousand inhab.
Itabuna	214.123	04	0.018 per thousand inhab.
Eunápolis	115.360	03	0.026 per thousand inhab.
Irecê	74.050	03	0.04 per thousand inhab.
Alagoinhas	153.023	02	0.013 per thousand inhab.

Compared to 10 years of study, there was a great disparity between the sexes. Women corresponded for 84.8% of cases and men for 15.1%, establishing a percentage difference of 69.6%. Of the patients, 70.6% were called brown. Regarding the number of deaths resulting from congenital hip deformities, there were 3 cases of deaths during the entire study period.¹⁹

The average number of days of hospital stay per person is 3.2. A total of 4,729 days during the study period. The average value per hospitalization was BRL 920.40, reaching BRL 1,006.00 in 2016. Thus, hospital expenses in the State were approximately BRL 1,000,500.00 in the last decade. Although the city of Salvador had a lower prevalence when compared to the city of Itanhém, the capital recorded expenditures of R\$ 535,378.00, 27.3% higher than Itanhém (Table 2).¹⁹

Table 2. Value of hospital services in cases of congenital hip deformities in Bahia during the years 2011 – 2021.¹⁹

VALUE OF HOSPITAL SERVICES (REAIS)	
BAHIA	1.003.456,39
Salvador	535.378,19
Itanhém	389.738,00
Barreiras	7.514,00
Ibiciuí	7.948,00
Feira de Santana	31.518,00
Vitória da Conquista	6.665,54
Santo Antônio de Jesus	7.246,05
Juazeiro	1.413,18

Guanambi	4.300,00
Teixeira de Freitas	6.356,06
Itabuna	409,40
Eunápolis	308,74
Irecê	834,52
Alagoinhas	192,65

The age groups recorded in the admissions were discrepant. All cases reported in the city of Itanhém were from 10 years of age, with 17.9% of cases (10 - 19 years old), 47.5% (20 - 29 years old), and 34.4% (30 - 49 years old), years old). In the city of Salvador, the records were earlier: 48.5% (0 - 4 years old), 23% (5 - 9 years old), 20.8% (10 - 19 years old), and 7.1% (20 - 49 years old) years old). In Barreiras, of the 20 registered cases, 85% were younger than 1 year and only 15% were between 20 and 49 years old (Table 3).

Table 3. Hospitalizations by age group due to congenital hip deformities in Bahia during the years 2011-2021.¹⁹

County	less than 1 year	1 to 4 years	5 to 9 years	10 to 14 years	15 to 19 years	above 20 years old
Itanhém	-	-	-	6	158	748
Salvador	49	167	104	67	26	32
Barreiras	17	-	-	-	-	3
Ibicuí	-	-	-	-	2	18
Feira de Santana	7	4	2	3	-	2
Vitória da Conquista	2	-	1	2	-	3
Santo Antônio De Jesus	1	-	1	-	-	7
Juazeiro	-	-	1	-	-	5
Guanambi	1	3	-	1	-	2
Teixeira de Freitas	-	-	-	3	-	3
Itabuna	1	-	-	1	-	2

Regarding the hospitals that most provided care to these patients, there is the Maria Moreira Lisboa Hospital, in the city of Itanhém, with 912 records of assistance to patients with congenital hip deformity. While in the city of Salvador, Martagão Gesteira Hospital and SARA H were responsible for 21.4% of the care provided (Table 4).¹⁹

Table 4. Main establishments providing assistance to congenital hip deformities in Bahia during the years 2011-2021.¹⁹

ESTABLISHMENTS	HOSPITALIZATIONS
Maria Moreira Lisboa Hospital	912
Martagão Gesteira Hospital	215
SARA H Salvador	102
St. Anthony's Hospital	45
Santa Isabel Hospital	33
Roberto Santos General Hospital	21
Anita Rodrigues Leal Maternity	20
West Hospital	20
State Children's Hospital	14

DISCUSSION

Congenital hip deformities have an unknown etiopathogenesis, however, some possible causes can be cited: mechanical factors, such as delivery presentation, oligohydramnios, primiparous women, congenital knee recurves and congenital muscular torticollis can be screened during prenatal care; Correlation between physiological factors and/or their imbalances, namely ligament laxity and hormonal changes (increased estrogen and relaxin) in women. In the social aspect, a relevant factor is the clothing of children with blankets that force the hip adduction position and the use of inappropriate diapers and straps can be risk factors for developing developmental dysplasia of the hip.⁶

In deliveries in which the fetus is arranged longitudinally within the uterus, breech presentation, the baby's anatomy is distorted, with compression of the left hip against the mother's sacral region, which generates a greater movement of adduction of the child's hip to facilitate childbirth. In addition, extreme hip flexion with knee extension causes dislocation of the femoral head and leads to

1
2
3 shortening and contracture of the iliopsoas muscle, which increases the likelihood of developmental
4 dysplasia of the hip.⁷
5
6

7 Clinically, the diagnosis of developmental dysplasia of the hip in newborns and infants is
8 performed using the Barlow and Ortolani maneuvers. A reduced but displaceable hip confers a positive
9 Barlow maneuver. On the other hand, the Ortolani maneuver is positive when the hip is dislocated, but
10 it is reducible.⁹ These maneuvers allowed the early detection of congenital hip deformities, but their
11 negativity does not exclude the diagnosis, since the instability of the coxofemoral joint, tested during
12 the maneuvers, is not synonymous with dislocation.¹⁰
13
14
15
16
17
18
19

20 In cases of infants older than 3 months, the clinical presentation of limited hip abduction and
21 unilateral shortening of one of the lower limbs suggests developmental dysplasia of the hip. After gait
22 exposure, some anatomical changes can be visualized during the physical examination, such as limited
23 hip abduction, positive Trendelenburg, "anserine" gait, and lumbar hyperlordosis.¹⁰
24
25
26
27

28 Complementary imaging tests help in the diagnosis. Static and dynamic ultrasound is the test
29 of choice. However, its limitations consist of being an operator-dependent test, in addition to generating
30 false-positive results.^{11,12}
31
32
33

34 Simple radiography can also be used, however, due to bone development, newborns have a
35 large part of cartilaginous tissue, which makes visualization and analysis difficult through this method,
36 is indicated only for babies over 4 months. Hip arthrography, computed tomography, and magnetic
37 resonance are other possible tests to facilitate the diagnosis when well indicated.¹³
38
39
40
41
42

43 outcome. However, the data pointed out by the study prove that the diagnosis and the search
44 for treatment have still occurred late in the state of Bahia. The city of Itanhém recorded 99.3% of cases
45 of hospitalization for developmental dysplasia of the hip after 15 years of age, the other 0.7% are in the
46 age group of 9 to 14 years. Meanwhile, in the capital of Bahia, 71.9% of the cases corresponded to the
47 age group from 0 to 14 years old, which configures a picture of better diagnostic assistance.¹⁹ In this
48 context, it is possible to infer the difficulties encountered in several municipalities, either by the lack of
49 qualified professionals for targeted assessment or the lack of resources to carry out complementary
50 exams.
51
52
53
54
55
56
57
58
59
60

1
2
3 The high incidence rate observed in the municipality of Itanhém, located in the extreme south
4 of Bahia, with 19,231 inhabitants,⁸ found 912 cases of congenital hip deformity during the period
5 studied. A higher number of cases when compared to other cities in Bahia, including the capital
6 Salvador, which has 2 million and 900 thousand inhabitants, 150 times greater. However, even though
7 Itanhém has a higher prevalence, the hospital costs recorded are lower than in other municipalities with
8 lower numbers of cases.
9
10
11
12
13
14

15 It is worth emphasizing the need to search for causes that directly justify lower spending in a
16 region with higher incidence. It is speculated that there is a greater number of regulations for reference
17 centers due to the lack of resources in the city in question, less political investment, and the reduction
18 of diagnoses due to a lack of specialists. Another crucial issue to be clarified is the predisposing factors
19 found in this small municipality that place it in the first place in the congenital deformities of the hip
20 joint in the state of Bahia.
21
22
23
24
25
26
27

28 Treatment of developmental dysplasia of the hip includes early diagnosis, joint reduction, and
29 stabilization of the hip. The treatment division follows the diagnostic age group. In newborns, at 04
30 months of age, the femoral head is reduced in the acetabular cavity and its maintenance until joint
31 stability with the use of the Pavlink brace, ensuring the reduction in flexion to avoid forced abduction.¹⁵
32
33
34
35
36

37 From 4 to 18 months of age, progressive abduction and subsequent reduction are performed
38 under anesthesia and tenotomy of the hip adductors. Soon after, a cast immobilization of the
39 pelvicopodal type is performed in the human Salter position for 6 to 8 weeks, and later, use of a
40 Milgram-type orthosis for a period equal to or greater than 2 months. Traction before the zenith has been
41 a reason for the divergence between the literature, considering that it does not alter the treatment result.
42 After 18 months of age, children are expected to start walking, in which part of the literature is in favor
43 of immediate surgical intervention using the Salter osteotomy technique, ensuring anterolateral coverage
44 of the femoral head.^{5,15}
45
46
47
48
49
50
51
52
53

54 There are numerous surgical techniques for performing pelvic osteotomy to correct tardive
55 acetabular dysplasia: preservation of articular cartilage, triple osteotomy (Steel technique), or medial
56 sliding (Chiari technique). In which, the frequency, degree of disability, duration of symptoms,
57 morbidity, mortality, and osteonecrosis are taken into account, which is the most serious complication
58
59
60

1
2
3 related to iatrogenesis in the treatment of developmental dysplasia of the hip.^{14,15} In Salter's osteotomy,
4 femoral shortening can be performed in parallel as an alternative to contain complications, however,
5 some other problems can be installed. Like any invasive surgical procedure, it can be exposed to
6 problems such as infections, secondary anatomical lesions, osteochondritis, dislocation, and avascular
7 necrosis.¹⁶

8
9
10
11
12
13
14 Exposure of the hip joint with an abduction greater than 70° or forced medial rotation in
15 treatment is a frequent cause of osteonecrosis. Therefore, conservative or surgical treatment (closed or
16 open reduction technique) must comply with basic principles to reduce complications associated with
17 poor performance. Another possible complication is vascular impairment of the femoral epiphysis, the
18 bone area responsible for the joint, with varying degrees of severity, with or without injury to the
19 proximal epiphyseal plate of the femur.^{17,18}

20
21
22
23
24
25
26 To have functional rehabilitation, as in other orthopedic procedures, it is necessary to insert
27 physical therapy treatment that allows an improvement in the patient's quality of life. This is due to the
28 evolution of science, with the application of biomechanical techniques aimed at gait training and should
29 be started as soon as the child can stand, and can be associated with the hydrotherapy technique, resulting
30 in better neuromuscular recovery.³

31 32 33 34 35 36 37 38 39 **CONCLUSION**

40
41
42
43 From the analysis of the data obtained, it was possible to observe the relationship between
44 congenital deformities of the hip and the epidemiological situation in the state of Bahia. The high
45 prevalence of mixed-race women and the predominance in some cities such as Itanhém and Salvador
46 are factors to be highlighted, as it is a problem with a low mortality rate, but with a high potential for
47 compromising the individual's quality of life. In this context, it appears that this public health problem
48 still needs investments for better diagnostic assistance in some municipalities, since the late diagnosis
49 of congenital hip deformities is still a reality even with several clinical and imaging methods available,
50 which makes treatment and rehabilitation of the patient difficult when compared to an early diagnosed
51 condition.
52
53
54
55
56
57
58
59
60

REFERENCES

1. Staheli LT. Ortopedia pediátrica na prática. 2 a. Porto Alegre: Artmed; 2008.
2. Harish SH. Distúrbios Ósseos e articulares. Quadril. In: Nelson. Tratado de Pediatria. São Paulo: Saunders, 2009. p 2812-1814.
3. Andrade MN, Avila PES, Bossini ES. Tratamento fisioterapêutico da displasia do desenvolvimento do quadril: revisão bibliográfica - Physical therapy treatment for developmental dysplasia of the hip: review of the literature - Rev. para. Med 2015. 29(1): 45-50.
4. Guarniero R, Montenegro NB, Vieira PB, Peixinho M. Sinal de Ortolani: resultado do exame ortopédico em 9171 recém-nascidos na Associação Maternidade de São Paulo. Rev Bras Ortop 1988; 23(5):125-8
5. Ahmed E, Mohamed A, Wael H. Tratamento cirúrgico de displasia de desenvolvimento do quadril de apresentação tardia depois da idade da marcha - Surgical treatment of the late - presenting developmental dislocation of the hip after walking age - .Acta ortop. bras 2013. 21(5): 276-280.
6. Santilli C, Akkari M, Alcantara T. Doenças do desenvolvimento. Displasia do Desenvolvimento do quadril. In: Cohen M, Mattar RJr, Garcia RJF. Tratado de Ortopedia. São Paulo: Roca, 2007, p. 501-506
7. Dunn PM. Perinatal observations on the etiology of congenital dislocation of the hip. *Clin Orthop Relat Res* 1976; (119):11-22.

- 1
2
3 8. Brasil. Instituto Brasileiro de Geografia e Estatística. Projeção da população. [Acesso 26.05.22].
4
5 Disponível em:
6
7 http://www.ibge.gov.br/home/estatistica/populacao/projecao_da_populacao/2013/default_tab.shtm.
8
9
10
11
12
13 9. Barlow TG. Early diagnosis and treatment of congenital dislocation of the hip. *Proc R Soc Med*.
14 1963;56(9):804-806.
15
16
17
18
19
20 10. Ortolani M. Congenital hip dysplasia in the light of early and very early diagnosis. *Clin Orthop*
21 *Relat Res*. 1976;(119):6-10.
22
23
24
25
26 11. Graf R. The diagnosis of congenital hip-joint dislocation by the ultrasonic Compound treatment.
27 *Arch Orthop Trauma Surg (1978)*. 1980;97(2):117-133. doi:10.1007/BF00450934
28
29
30
31
32 12. Hernandez RJ, Cornell RG, Hensinger RN. Ultrasound diagnosis of neonatal congenital
33 dislocation of the hip. A decision analysis assessment. *J Bone Joint Surg Br*. 1994;76(4):539-
34 543.
35
36
37
38
39
40
41 13. Bertol P, Macnicol MF, Mitchell GP. Radiographic features of neonatal congenital dislocation
42 of the hip. *J Bone Joint Surg Br*. 1982;64(2):176-179. doi:10.1302/0301-620X.64B2.7068736.
43
44
45
46
47 14. Steel HH. Triple osteotomy of the innominate bone. *J Bone Joint Surg Am*. 1973;55(2):343-
48 350.
49
50
51
52
53 15. Chiari K. Medial displacement osteotomy of the pelvis. *Clin Orthop Relat Res*. 1974;(98):55-
54 71. doi:10.1097/00003086-197401000-00008
55
56
57
58
59
60

- 1
2
3 16. Rocha VL, Tomé ALC, Castro DLS, Oliveira LZ, Moraes FB. Clinical and radiological
4 evaluation on developmental hip dysplasia after salter and Ombrédanne procedure. Revista
5 Brasileira de Ortopedia 2011; 46 (6): 650-655.
6
7
8
9
10
11 17. Herold HZ. Unilateral congenital hip dislocation with contralateral avascular necrosis. *Clin*
12 *Orthop Relat Res.* 1980;(148):196-202.
13
14
15
16
17 18. Kalamchi A, MacEwen GD. Avascular necrosis following treatment of congenital dislocation
18 of the hip. *J Bone Joint Surg Am.* 1980;62(6):876-888.
19
20
21
22
23 19. Brasil. Ministério da Saúde. Datasus. Informações de Saúde. Acesso [20.05.22]. Disponível em:
24 <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sih/cnv/qiuf.def>.
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60